عنوان مقاله:

Optimal placement of active tendon in the building including soil–structure interaction effect using genetic algorithm

محل انتشار:

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خلاصه مقاله:

Most studies on vibration control of building have considered the buildings resting on fixed base while the soil-structure interaction (SSI) effect may be of great significance in the buildings resting on soft soil. It is well known that the SSI effects would significantly modify the dynamic characteristics of structures. In this paper, a multi-objective genetic algorithm is used to optimize the placement of active tendon in frame structures considering soil–structure interaction effect to reduce active control cost and response of structures. To use multi-objective genetic algorithm, the MATLAB toolbox is used to find a set of Pareto optimal solutions for a multi-objective minimization. The results indicate that the method is able to find the number and location of the active tendons in the frame while the last story displacement is minimized. The main benefit of adopting the algorithm is to reduce the number of installed active tendons approximately by 50%.

کلمات کلیدی:

Optimal placement, Seismic control, multistory buildings, active tendons, soil–structure interaction

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